
Citation:

Heirigs, M and DeLisi, M and Fox, B and Dhingra, K and Vaughn, M (2018) Psychopathy and Suicidal Thoughts and Behaviors Revisited: Results From a Statewide Population of Institutionalized Youth. *International Journal of Offender Therapy and Comparative Criminology*. ISSN 0306-624X
DOI: <https://doi.org/10.1177/0306624X18812533>

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Psychopathy and Suicidal Thoughts and Behaviors Revisited: Results from a Statewide
Population of Institutionalized Youth

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Abstract

Suicide is the leading cause of death for incarcerated youth, and up to half of all juveniles in confinement experience suicidal ideation in addition to other psychopathology, including psychopathic personality features. Unfortunately, limited research has investigated the psychopathy-suicidality link among juvenile delinquents and using newer psychopathy measures. Based upon a statewide population of incarcerated juvenile offenders, we found that psychopathy was a significant risk factor for suicidal ideation and lifetime suicide attempts, but the latter relationship was attenuated by lifetime depression diagnosis. Additionally, certain affective psychopathic features such as Stress Immunity conferred protection against suicidality, while behavioral and lifestyle components including Carefree Nonplanfulness, Blame Externalization, and Rebellious Nonconformity were positively linked to suicidal thoughts among the youth offenders. As these risk factors are routinely screened for in juvenile justice settings, this study's findings have considerable implications to applied practice and prevention among juvenile justice involved youth.

Keywords: psychopathy, suicidal ideation, suicide attempt, delinquents, juvenile justice

Introduction

Second only to accidents, suicide is the second leading cause of death among adolescents in the United States (Centers for Disease Control and Prevention, 2011; World Health Organization, 2011). Therefore, suicidality, defined as psychopathology associated with suicidal thoughts, suicidal ideation, and suicidal behavior, is a pressing public health concern. Although an acute problem among adolescents in the general population, suicidality is even more pronounced among juvenile delinquents and youth that are supervised by the juvenile justice system. According to the Bureau of Justice Statistics (2017), suicide is the leading cause of death for youth in confinement, and it is estimated that as many as half of all juveniles in confinement facilities experience suicidal ideation (National Action Alliance for Suicide Prevention, 2013a, 2013b). Moreover, a national survey of juvenile confinement facilities reported an unusually high prevalence of history of suicidal behavior (70%), prior suicide attempt (46%), prior suicidal ideation/threat (31%), and prior suicidal gestures (24%). The elevated suicidality prevalence estimates from the national survey comport with findings from other studies of delinquent youth residing in juvenile detention centers and juvenile confinement facilities (Abram et al., 2008; Ford, Hartman, Hawke, & Chapman, 2008; Rohde, Mace, & Seeley, 1997; Stokes, McCoy, Abram, Byck, & Teplin, 2015; Trulson, Haerle, Caudill, & DeLisi, 2016; Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010).

One explanation for the elevated suicidality among delinquent youth relates to their greater global psychopathology evidenced by comorbid substance use disorders, mood disorders, personality disorders¹, and behavioral disorders. However, one important type of

¹ Miller, Muehlenkamp, and Jacobson (2008) discuss the assorted problems associated with diagnosing juveniles with personality disorders

psychopathology that is prevalent among the most antisocial of youth—psychopathy—has an uncertain association with suicidality. On one hand, psychopathy could serve as a buffer against suicidal thoughts and behaviors because of the deficits in self-conscious emotions, stress immunity, and limited empathic connection to others in society. On the other hand, psychopathy could be a risk factor for suicidal thoughts and behaviors given the salience of impulsive behaviors, desire to manipulate and exploit others, and criminal identity that emerges from broadband involvement in antisocial behaviors (Boduszek, Dhingra, & Debowska, 2016; Perez, Jennings, Piquero, & Baglivio, 2016; Shagufta, Boduszek, Dhingra, & Kola-Palmer, 2015).

Psychopathy and Suicidality among Criminal Justice System Clients

Historically, much of the equivocal association between psychopathy and suicidality can be attributed to Cleckley's (1976) clinical observation that psychopathic individuals are low on suicidality, in fact, "suicide rarely carried out" was a diagnostic criterion for the disorder in his model. Specifically, Cleckley (1976, p. 359) articulated, "Instead of a predilection for ending their own lives, psychopaths, on the contrary, show much more evidence of a specific and characteristic immunity from such an act." Thus, for many years, it was believed that psychopathy was a disproportionately externalizing syndrome with substantially less risk lower risk of internalizing symptoms, including suicidality.

Although several studies have examined the psychopathy-suicide link among offender samples, unfortunately most of this research has been conducted on adults including civil psychiatric patients (Swogger, Conner, Meldrum, & Caine, 2009), federal prisoners (Verona, Patrick, & Joiner, 2001), female prisoners (Verona, Hicks, & Patrick, 2005), state prisoners (Smith, Selwyn, Wolford-Clevenger, & Mandracchia, 2014), offenders in residential drug treatment (Douglas, Lilienfeld, Skeem, Poythress, Edens, & Patrick, 2008), and community corrections clients (Gunter, Chibnall, Antoniak, Philibert, & Hollenbeck, 2011), not juvenile

offenders. Verona and colleagues (2001) found that suicide attempt history was significantly correlated with the behavioral and lifestyle features of psychopathy, but not associated with the affective and interpersonal dimensions of the disorder (Verona, Patrick, & Joiner, 2001). For instance, in a study of high school students in France, Chabrol and Saint-Martin (2009) found significant correlations between the affective and behavioral dimensions of psychopathy and score on a suicide ideation scale. In multivariate models, affective traits spanning callousness and unemotionality were significantly predictive of suicidal ideation net the effects of sex, age, drug use, and depression symptoms. The interpersonal and behavioral features of psychopathy were negatively associated with suicidal ideation albeit these effects did not achieve significance. In a related study using female federal prisoners, Verona et al. (2005) used the PCL-R and found that Factor 2 scores (behavioral and lifestyle features) were positively associated with suicide attempt history, but Factor 1 scores (affective and interpersonal features) were negatively associated suicide attempt history.

Drawing on male offenders selected from prisons or residential drug treatment facilities in five states, Douglas et al. (2008) reported mixed linkages between psychopathy as measured with the PCL-R and PPI, suicide-related behaviors, and suicidal ideation. Suicide-related behavior was defined as potentially self-injurious behavior in which the person either intended at some non-zero level to kill himself (suicide attempt), or wished to use the appearance of such to attain some other end (instrumental suicide-related behavior). Total PCL-R scores, Factor 2 scores, impulsivity scores, and Factor 2 of the PPI were positively related to suicide-related behaviors. The first factor of the PPI (Fearless Dominance) was negatively associated with suicide-related behaviors. Similar effects were seen for suicidal ideation. In other words, the fearlessness, dominance, and low anxiety features were negatively correlated with self-injurious thoughts and behavior (irrespective of intent) while

the self-centered, impulsive, manipulative, and blame externalization features were positively associated with self-injurious thoughts and behavior (irrespective of intent)².

Douglas et al. (2006) provided a robust overview of the relationship between psychopathy and suicide by examining 12 separate samples including adult and juvenile criminal offenders, psychiatric patients, and civilly committed individuals. They reported a small but significant correlation between behavioral features of psychopathy and suicidal behavior using grand means correlation. However, there was not an association between interpersonal features of psychopathy (shallow affect, remorselessness, guiltlessness, and callousness) and suicidal thoughts or behavior. Douglas and colleagues (2006) stated that the largest associations between suicidal ideation and psychopathy were found when written self-reports were used to measure suicidal ideation. It was suggested this is because it is easier to reveal sensitive information on paper, as opposed to through interviews. According to

² One way to conceptualize the divergent findings about psychopathy and suicide is with the primary versus secondary psychopathy model. Originally developed by Karpman (1929, 1941, 1948), primary psychopathy (originally described as idiopathic) was theorized to be congenital and characterized by an absence of negative emotions particularly anxiety, and more instrumental or predatory forms of antisocial behavior. Secondary psychopathy (originally described as symptomatic) was theorized to be the result of severe trauma exposure and is characterized by antisocial behaviors along with negative emotionality, such as anxiety and depression. Both primary and secondary psychopaths were believed to display serious antisocial behaviors and often have extensive criminal records; however, the main difference relates to their capacity to experience comorbid internalizing symptoms such as depression, stress, and anxiety. Using data from male prisoners, Smith et al. (2014) used the primary and secondary psychopathy designations and found that inmates that had secondary psychopathic features were more likely to have attempted suicide at multiple points in their life, and secondary psychopathy traits strengthened the relationship between depressive symptoms and suicidal ideation. Primary psychopathy was significantly correlated with suicidal ideation and depression, but not associated with suicide attempt status. Moreover, correlations between psychopathy, suicidality, and depression were stronger among secondary compared to primary psychopathy (also see, Docherty et al., 2016).

Douglas et al. (2006, p. 112), “The most important implication of the present set of findings is that ‘the’ suicide-psychopathy relationship is complex and multifaceted, and depends at least partially on measurement choice for both psychopathy and suicidality, sample composition factors, and other methodological factors.” In a study of adults on probation, parole, or other community-based sanction, Gunter et al. (2011) found that PCL:SV Factor 2 scores were significantly and positively associated with suicidal ideation, and PCL:SV total score was associated with a nearly fourfold increased likelihood of self-injury without lethal intent (i.e., non-suicidal self-injury).

Psychopathy and Suicidality among Juvenile Justice System Clients

In their study of delinquent career trajectories in the Incarcerated Serious and Violent Young Offender Study, McCuish, Corrado, Hart, and DeLisi (2015) reported that between 65% to 71% of youth had a positive self-identity and had interpersonal and personality features characterized by a bad temper, a proneness for anger, and frequent involvement in fighting. Although their study did not focus on suicidality, it was clear these psychopathic juvenile offenders exhibited almost entirely externalizing psychopathology (also see, Flexon, 2016; Flexon et al., 2016; Pechorro et al., 2014; Vaughn & DeLisi, 2008).

Using a statewide population of adjudicated delinquents, Vaughn, Edens, Howard, and Smith (2009) examined the primary vs. secondary psychopathy designation and found that secondary psychopathic youth had greater incidence of antidepressant medication, greater traumatic experiences, higher suicidal ideation, and significantly higher internalizing symptoms relating to anxiety, phobic anxiety, depression, interpersonal sensitivity, obsessive-compulsive traits, paranoid ideation, and somatization. Sevecke, Lehmkuhl, and Krischer (2009) examined the psychopathy-suicide link among 91 male and 123 female detainees in Germany. They found no association between psychopathy and suicide among male detainees; however, among girls there were significant positive linkages between suicidal

behavior and PCL: YV total score, lifestyle score, and antisocial score and negative associations between suicidal behavior and interpersonal score.

Javdani, Sadeh, and Verona (2011) compared 99 court-ordered youth receiving treatment and 85 community control youth and examined associations between psychopathy, overall suicide risk, self-injurious behavior regardless of intent (i.e., conflating suicidal and non-suicidal self-injurious behaviors), and suicide attempts with intent to die. They found that impulsivity features of psychopathy were associated with elevated risk for self-injurious behaviors regardless of intent and suicide attempts for males and females. Additionally, they found that girls who had high levels of callous-unemotional traits were significantly less likely to attempt suicide. Callous-unemotional traits had no protective feature for boys.

Current Focus

To review, psychopathy is associated with suicidal thoughts and behavior in multifaceted ways with some features conferring higher risk and other features conferring lower risk. Unfortunately, most of the knowledge base is derived from studies of adult criminal offenders, and the preponderance of prior studies have used PCL-R family measures. Thus, there are research gaps in terms of linkages between psychopathy and suicidality among juvenile offenders, research using multivariate as opposed to simple correlation analyses, and use of important behavioral and psychiatric controls to guard against confounding effects between psychopathy and suicide. Moreover, the current analysis used the PPI-SF and its eight subscales indicating various features of psychopathy which has not been previously done to study suicidal ideation and attempts among juveniles in confinement. With this in mind, the current aim is to evaluate the associations between an aggregate and disaggregated psychopathy measure (the Psychopathic Personality Inventory), suicidal ideation, and lifetime suicide attempt.

Generally, the relationship between the PPI-SF can be constructed into factors of Fearless Dominance and Self-Centered Impulsivity and these have differential theoretical relations to suicidal thoughts and behaviors. Fearless Dominance, comprised of Social Potency, Stress Immunity, and Fearlessness. The variables included in fearless dominance may led to an risk of suicidal behaviors based on Fearlessness involving an absence of anxiety, harm avoidance, and a willingness to engage in risky behaviors. However, Stress Immunity could be theorized as a protective factor in relation to suicidal behaviors because of the absence of reaction to stimuli that are generally anxiety inducing. Social Potency could contribute to an individual using suicidal behaviors as a means to influence caregivers. For instance, Douglas et al. (2006) suggests that prior findings of a positive suicide-psychopathy relationship may not be genuine, but instead a manipulative action. Self-Centered Impulsivity, comprised by Machiavellian Egocentricity, Blame Externalization, and Rebellious Nonconformity. One on hand, high levels of Machiavellian Egocentricity (i.e. narcissism) could serve as a protective factor since people may have such a high value of themselves that suicide would never be considered. Rebellious Nonconformity may led to an increased risk for suicidal behavior because of lack of concern for social norms. Douglas et al. (2008) found that it wasn't the full PCL-R score that was related to suicidal behaviors but more the impulsive and irresponsible traits. Thus, it is important to empirically examine associations between subcomponents of psychopathy and suicidality.

Methods

Participants and Procedures

All youth receiving services in the Missouri State Division of Youth Services (DYS) were contacted to participate in the research study assessing demographic characteristics, substance-use patterns, psychiatric symptoms, annual offending, personality traits, and information about time in custody. Most youth commitments to DYS care are new and only a small percentage represent youth with prior DYS commitments. Generally, youth were committed for a variety of delinquent offenses. Previous pilot work with DYS institutions had shown a high level of willingness to participate and 728 interviews were conducted. Of these, four were stopped when interviewers determined that youth were too functionally impaired to complete the interview, and one youth elected not to complete the interview. These five interviews were not included in the dataset. Two youths were transferred to other facilities while interviewers were in the facility and were not available for interviewing. Finally, ten youths listed on facility rosters when interviewers arrived were on furlough and could not be interviewed. Of 740 youths potentially eligible to participate, 728 were available for interview of which all began the interview and 723 completed it. This translates into a 97.7% response rate.

Formal written consent was obtained from the Deputy Director for Treatment Services for the Division of Youth Services. DYS administrators, facility managers, and staff were fully aware of the research project. Adolescents were notified of the upcoming project and informed that participation was voluntary and what it would entail. Research project staff was available to answer any questions that youth or staff had regarding this process or the project in general. Youths were only allowed to participate if they had the consent of DYS and had provided their own assent. Youths were informed that their decision whether to participate would in no way impact any legal situation or standing within or outside of DYS.

Youths who signed informed assent then completed the interview battery. Formal written consent was obtained by DYS; all study protocols were approved by the Washington University Institutional Review Board (IRB) and the project received certificates of confidentiality from the National Institute on Drug Abuse and the Federal Office of Human Research Protections. Study subjects were individually interviewed and given \$10 for their participation. Division of Youth Services staff supervised the movement into the on-site interview room and the return movement to previous activity. All eligible DYS youth were interviewed by trained graduate students using measures that gathered information on demographic characteristics, substance use, personality traits, psychiatric symptomatology, and prior offending and victimization.

Measures

Dependent Variables

Suicidal ideation ($\bar{x}=2.21$, $SD=2.37$, $\alpha=.88$) was measured using The Massachusetts Youth Screening Inventory (MAYSI-2) Traumatic Experience subscale (Grisso et al., 2001) and has been used in previous work on this topic (Douglas et al., 2006). The 5-items included whether at any point in his or her life, the youth had (1) ever wished to be dead, (2) felt that life was not worth living, (3) wanted to hurt himself or herself, (4) felt like killing himself or herself, and (5) given up hope on life. These 5 items have been used in past research on the linkage between psychopathy and suicidal ideation (Douglas et al., 2006).

Suicide attempt ($\bar{x}=.25$, $SD=.44$) was a self-reported item indicating whether they youth had ever attempted suicide (coded as no/yes). The individuals were asked if they had actually attempted suicide. Overall, 25.5% of the youth had attempted suicide and 74.5% had not.

Covariates

Psychopathy. The Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) and its short-form variant (PPI-SF; Lilienfeld & Hess, 2001) are leading self-report measures of psychopathy. The 56-item PPI-SF was used (\bar{x} = 94.46, SD = 6.25, range = 88-120, α = .67). The PPI-SF is considered a “pure” personality inventory of psychopathy because it contains no items directly assessing antisocial behaviors. The PPI family of measures have demonstrated validity and reliability among institutionalized and clinical samples (Andershed, Köhler, Louden, & Hinrichs, 2008; DeLisi, Angton, Vaughn, Trulson, Caudill, & Beaver, 2014; Vaughn, Howard, & DeLisi, 2008; Veen, Andershed, Stevens, Doreleijers, & Vollebergh, 2011).

PPI-SF Domains

Machiavellian Egocentricity pertains to the narcissistic, self-interested, and ruthless social functioning aspect of psychopathy (\bar{x} = 17.2, SD = 4.46, Range = 7-28, α = .67).

Social Potency assesses an individual’s perceived ability to manipulate and influence others (\bar{x} = 20.68, SD = 4.07, Range = 7-28, α = .55).

Coldheartedness assesses the callousness, unemotionality, and lack of sentimentality (\bar{x} = 15.19, SD = 4.60, Range = 7-28, α = .70) of the disorder.

Carefree Nonplanfulness relates to indifference to planning one’s actions and general irresponsibility (\bar{x} = 14.24, SD = 3.90, Range = 7-28, α = .64).

Fearlessness captures an absence of anxiety and harm avoidance and a willingness to engage in risky behaviors (\bar{x} = 17.08, SD = 5.26, Range = 7-28, α = .68).

Blame Externalization assesses an external locus of control where an individual blames others and rationalizes their behavior (\bar{x} = 18.23, SD = 4.82, Range = 7-28, α = .72).

Rebellious Nonconformity reflects a lack of concern for social rules (\bar{x} = 14.79, SD = 4.12, Range = 7-28, α = .55).

Stress Immunity encompasses an absence of reaction to stimuli that are ordinarily stressor anxiety-inducing (\bar{x} = 18.99, SD = 4.34, Range = 7-28, α = .63).

Control Variables

Several control variables were included to guard against confounding effects of race (Blum et al., 2000; Cauffman, 2004), depression symptoms/diagnosis and/or antidepressant use (Barton et al., 2017; Brent et al., 1993; Dhingra, Boduszek, Hyland, & Shagufta, 2015; Pennington, Cramer, Miller, & Anastasi, 2015), and gun use (Anestis, Anestis, & Preston, 2018; Vaughn, Howard, & Harper-Chang, 2006). For instance, Anestis et al. (2018) found that “boldness” was a common trait among gun owners. Their findings indicated that certain personality traits were associated with gun ownership and led to insights on why gun owners are at a greater risk of gun suicide if they develop suicidal thoughts. Specifically, Anestis et al. (2018, p. 198) stated, “We anticipated that psychopathic traits would serve as useful indicators of dispositional capability, exhibiting robust direct or interactive associations with other components of the capability for suicide.” Therefore, it is important for studies regarding the relationship between psychopathy suicidality link to also include a measure for firearms.

These control variables also include sex (87% male [coded as 0]), 13% female [coded as 1]), African American (33%, coded as 1; not African American 67%, coded as 0), age (\bar{x} = 15.49, SD = 1.23, range = 11-20), self-reported use of a firearm (\bar{x} = .008, SD = .09, range = 0-1), self-reported antidepressant use (\bar{x} = .23, SD = .42, range = 0-1 [coded as no/yes]), and self-reported lifetime depression diagnosis (\bar{x} = .33, SD = .47, range = 0-1 [coded as no/yes]). The lifetime depression diagnosis was part of a series of questions that asked whether the youth had ever been diagnosed with mental illness, which included 371 respondents. Of these 121 reported they had been diagnosed with depression and 250 youth indicated some other psychiatric condition. Despite dropping the analytical sample in about half for models 2, it is

important to control for depression in multivariate models and to provide a more conservative test of the psychopathy-suicidality link. Statistical Analysis Two analytical techniques were used. First, negative binomial regression with incidence rate ratios (IRR) was used to estimate suicidal ideation, as the dependent variable is a count measure of suicidal ideation symptoms. Preliminary Poisson regression models indicated overdispersion, and thus the negative binomial estimator was used (confirmation is shown in the LR test of α in the tables). Second, logistic regression was used to estimate lifetime suicide attempt. In both negative binomial and logistic regression models, bootstrapped standard errors with 50 replications were used to provide greater confidence in the estimates (Efron & Tibshirani, 1986).

Findings

Correlation Matrix

Table 1 about here

Table 1 displays bivariate correlations that were conducted and led us to potential insights on the results negative binomial regression models. Not only was suicidal ideation positively correlated with the PPI-SF total. Suicidal ideation was also positively correlated with multiple subsets of the PPI-SF including, Machiavellian Egocentricity, Carefree Nonplanfulness, Fearlessness, Blame Externalization, and Rebellious Nonconformity. However, suicidal ideation was negatively correlated with Social Potency, Coldheartedness, and Stress Immunity. Suicidal ideation was also negatively correlated with depression diagnosis and the use of antidepressants. Additionally, being female was positively correlated with suicidal ideation, while being African American was negatively correlated with suicidal ideation. On the other hand, having attempted suicide in the past was positively correlated with suicidal ideation, Blame Externalization, and Rebellious Nonconformity. Conversely, having attempted suicide in the past was negatively correlated with Social Potency and Stress Immunity. Thus, according the correlation results psychopathy and its factors, as measured by the PPI-SF play a large role in suicidal ideation compared to suicide attempts.

Negative Binomial Regression Models for Suicidal Ideation

Table 2 displays negative binomial regression models for suicidal ideation using the total psychopathy score without (model 1) and with (model 2) inclusion of lifetime depression diagnosis antidepressant use. Total psychopathy score was significantly and positively associated with suicidal ideation in both specifications (IRR = 1.01, $z = 3.18$, $p < .001$ without depression and IRR = 1.01, $z = 2.87$, $p < .01$ with depression) suggesting that youth with greater psychopathic personality features experienced significantly greater suicidal ideation. Females, non-African Americans, and those who had used a firearm also had

significantly greater suicidal ideation in both models. Lifetime depression diagnosis and antidepressant use were positively associated with suicidal ideation. Age was not significantly associated with suicidal ideation in either model.

Table 2 about here

Table 3 displays negative binomial regression models using the eight PPI subscales in models without (model 1) and with (model 2) inclusion of lifetime depression diagnosis and antidepressant use. In model 1, four of the subscales were significantly associated with suicidal ideation. Stress Immunity (IRR = .938, $z = -4.98$, $p < .001$) was negatively associated suggesting these features are a protective factor against suicidal thoughts. In contrast, Blame Externalization (IRR = 1.04, $z = 4.52$, $p < .001$), Carefree Nonplanfulness (IRR = 1.04, $z = 3.53$, $p < .001$), and Rebellious Nonconformity (IRR = 1.03, $z = 2.45$, $p < .05$) were positively associated, suggesting these features are a risk factor for suicidal thoughts. In model 2, which included lifetime depression diagnosis and antidepressant use, the effects for Carefree Nonplanfulness were no longer significant; however, the effects for Blame Externalization (IRR = 1.03, $z = 3.28$, $p < .01$), Rebellious Nonconformity (IRR = 1.03, $z = 2.45$, $p < .05$), and Stress Immunity (IRR = .938 $z = -4.98$, $p < .001$) remained significant. Machiavellian Egocentricity, Social Potency, Coldheartedness, and Fearlessness were not associated with suicidal ideation in either model. Females and non-African Americans had greater suicidal ideation in both models. The effects for gun use were attenuated by the inclusion of lifetime depression diagnosis and antidepressant use.

Table 3 about here

Logistic Regression Models for Lifetime Suicide Attempt Table 4 displays logistic regression models for lifetime suicide attempt using the total psychopathy scores without (model 1) and with (model 2) inclusion of lifetime depression diagnosis and antidepressant use. In model 1,

psychopathy was positively associated with lifetime suicide attempt (OR = 1.01, $z = 2.49$, $p < .01$). Moreover, females, non-African Americans, and youth who have used firearms were significantly more likely to have attempted suicide. In model 2, the effect for psychopathy was attenuated to non-significance; however, the effects for sex and antidepressant use were significant. Lifetime depression diagnosis was also not significantly associated with lifetime suicide attempt.

Table 4 about here

Table 5 displays logistic regression models for lifetime suicide attempt using the eight PPI subscales in models without (model 1) and with (model 2) inclusion of lifetime depression diagnosis and antidepressant use. In model 1, one psychopathic feature was significantly and positively associated with lifetime suicide attempt. Rebellious Nonconformity (OR = 1.08, $z = 2.66$, $p < .01$). An additional psychopathy feature—Stress Immunity—had a significant negative association with lifetime suicide attempt (OR = .869, $z = -5.28$, $p < .001$). Other covariates including female and non-African American were also significantly associated with lifetime suicide attempt. In model 2 with lifetime depression diagnosis and antidepressant use specified, the significant effects for Rebellious Nonconformity (OR = 1.08, $z = 2.32$, $p < .05$), and Stress Immunity (OR = .868, $z = -4.33$, $p < .001$) remained. Moreover, Blame Externalization became significant (OR = 1.05, $z = .028$, $p < .05$). The effects for sex remained significant. Whereas lifetime depression diagnosis was not significant, antidepressant use was significantly related to lifetime suicide attempt (OR = 1.93, $z = 3.12$, $p < .01$).

Table 5 about here

Supplemental Models

Additional models using higher-order factors of Fearless Dominance (comprised of Social Potency, Stress Immunity, and Fearlessness) and Self-Centered Impulsivity (comprised of Carefree Nonplanfulness, Rebellious Nonconformity, Machiavellian Egocentricity, and Blame Externalization) were also conducted. For suicidal ideation, Fearless Dominance was inversely associated (IRR = .99, $z = -2.01$, $p < .05$ with depression specified and IRR = .98, $z = -3.46$, $p < .001$ without depression specified) and Self-Centered Impulsivity was positively associated (respective coefficients [IRR = 1.02, $z = 6.80$, $p < .001$ and IRR = 1.03, $z = 8.78$, $p < .001$). For lifetime suicide attempt, Fearless Dominance was significantly associated in models without (OR = .98, $z = -2.03$, $p < .05$) and with (OR = .98, $z = -2.02$, $p < .05$) depression specified and Self-Centered Impulsivity was also significant in both specifications (OR = 1.05, $z = 5.77$, $p < .001$). We also ran models with an interaction term (Fearless Dominance*Self-Centered Impulsivity) specified, and the result was not significant for either suicidal ideation or suicide attempt irrespective of the inclusion of depression.

Discussion

The psychopathy-suicidality relationship is multifaceted, and extant research has produced mixed findings with some studies indicating that psychopathy is a protective factor against suicidal thoughts and behaviors, while other studies have indicated psychopathy is a risk factor for suicidal thoughts and behaviors. In general, previous research has evidenced that factor 1 features of PCL-R psychopathy have served as a risk factors, while factor 2 aspects of PCL-R psychopathy have shown to be protective factors. Using a statewide population of institutionalized delinquents, the current study found that psychopathy is overall a risk factor for lifetime suicidal ideation and lifetime suicide attempts, but the latter relationship is attenuated by lifetime depression diagnosis and antidepressant use. In addition, one specific psychopathy feature, the affective component of Stress Immunity conferred protection against suicidal thoughts and behaviors. This supports prior research indicating that affective components of the PCL-R were associated with lower levels of suicidality among inmates (Verona et al., 2005). Several additional findings are important for their research implications and connections to applied practice with behavioral disordered and juvenile justice-involved youth. First, the findings show the value of using diverse measures to examine the psychopathysuicidality link beyond PCL-R measures used in most prior research, and the richness that comes from disaggregating total psychopathy scores into subcomponents of the disorder. With or without depression and antidepressant use in the model, psychopathy was positively associated with suicidal ideation and in various specifications, Blame Externalization and Rebellious Nonconformity were also positively linked to suicidal thoughts, perhaps due to the disruptive impact these traits on have on interpersonal relationships (Joiner, 2005). This also supports the findings of prior research, which suggests that behavioral and lifestyle features (rather than affective components) were associated with higher levels of suicide among inmates (Verona et al., 2005). However, Stress Immunity,

which index a resilience to, or efficiency in the ability to experience aversive affective states, showed negative associations with suicidal ideation.. Thus, while youth high in psychopathic traits are generally more likely to experience suicidal ideation, those whose personalities are characterized by coldness, emotional aplomb, and seeming imperviousness to stressful conditions are less likely to contemplate suicide most likely due an inability to feel the emotional pain that often drives suicidal behaviors (Dhingra et al., 2015; Klonsky & May, 2014). Substantively, the subscales of the PPI that were positively associated with suicidal ideation present an individual who is disinhibited, feckless, impulsive, nonconforming, and prone to attribute responsibility for his or her misgivings to others. Additionally, a youth that lacks Stress Immunity and is instead highly anxious and upset by various stimuli is much more likely to contemplate suicide. These findings comport with prior research that found that several personality features, particularly impulsivity are significantly associated with suicidal ideation (Brezo, Paris, & Turecki, 2006; Brezo et al., 2006; Conner et al., 2004; Klonsky & May, 2010). Second, the current analyses also show the importance of separating suicidal ideation from suicide attempts (Dhingra, Boduszek, & O'Connor, 2015; Klonsky & May, 2014) vis-à-vis their associations with psychopathy. Blame Externalization had a strong, positive association with suicidal ideation, but was not significantly associated with lifetime suicide attempt until antidepressant use and depression was included in the model. Carefree Nonplanfulness, Rebellious Nonconformity, and Stress Immunity were significantly linked to both suicidal ideation and lifetime suicide attempt. The traits captured by the Carefree Nonplanfulness and Rebellious Nonconformity factors are associated with a variety of painful and provocative events (e.g., non-suicidal self-injury, childhood maltreatment; Douglas et al., 2006, 2006; Swogger, Conner, Meldrum, & Caine, 2009) theorized to bring about an acquired capability for lethal self-injury (Joiner, 2005).

Third, the findings have direct application for practitioners who treat and supervise delinquent youth especially those in detention centers, residential placement, and confinement facilities—settings where suicide is the leading cause of death (Bureau of Justice Statistics, 2017). Although the use of brief mental health screening is universal in juvenile justice settings, these assessments primarily measure depression and depressive symptomology given their strong associations with suicidal thoughts and behaviors. Yet the current findings showed that several psychopathy features particularly those relating to impulsivity, proneness to stress, external locus of control, and fearlessness should also be screened for their relation to self-harm. Indeed, in model 2 for lifetime suicide attempt, lifetime depression diagnosis was not significant whereas three psychopathy features were. Others have similarly shown that psychopathy features attenuate the association between depression and suicidality (Javdani, Sadeh, & Verona, 2011). Psychopathy is extensively examined in juvenile justice settings for its usefulness in risk assessment (DeLisi, 2016; Frick, Ray, Thornton, & Kahn, 2014; Viljoen, McLachlan, & Vincent, 2010), and should also be examined for its risk for suicidal thoughts and behaviors. Given the association between firearm ownership and suicide ideation in the present study, and research indicating that experience with firearms may habituate individuals to the concepts of death and pain (Anestis et al., 2017), the study highlights a clear point of intervention. As gun ownership is a tangible risk factor, the use of firearms means safety strategies (e.g., limitation of access to and safe storage) may interrupt the transition from suicidal thoughts to actions. Suicide is a preventable act and uncovering factors that lead to suicidal ideation and the transition from suicidal thoughts to behavior (Dhingra et al., 2014; Klonsky & May, 2014) can help juvenile justice practitioners to create a safer and more secure environment for the youth they are serving.

There are limitations to the current study that should be considered and hopefully used to inform future research. First, we lacked contextual information that would offer insight into the proximal and distal factors that contributed to the youth's suicidal ideation and where applicable, their suicide attempt. For instance, Jordan and Samuelson (2016) found that perpetrating violence repeatedly was the strongest predictor of suicidal intent in their study using data from the Collaborative Psychiatric Epidemiological Surveys. Among serious delinquent youth, perpetration of violence (Caudill & Trulson, 2016; DeLisi, Piquero, & Cardwell, 2016; Vaughn et al., 2014) and exposure to violence (Baglivio & Epps, 2016; Baglivio, Wolff, Piquero, & Epps, 2015; Craig, Piquero, Farrington, & Ttofi, 2017; Ford et al., 2013; Fox et al., 2015) are dramatically high, thus it would be valuable to employ longitudinal data where investigators could measure the factors that influenced the youth's suicidal thoughts and behaviors. The temporal issue is important regarding some of the covariates. Theoretically, youth should not be taking antidepressant medication until after they have exhibited depressive symptoms and were seen by a psychiatrist, but we cannot guarantee this. In addition, the temporal connection between firearm use and suicidal thoughts and behaviors cannot be specified. Of note, Stress Immunity was correlated negatively with Machiavellian Egocentricity, Carefree Nonplanfulness, Fearlessness, Blame Externalization, and Rebellious Nonconformity. These correlations warrant further discussion, investigation, and a plethora of potential research on psychopathology. For example, Stress Immunity was shown to be a protective factor against suicide. However, it also was a protective factor in regards to other psychopathic subfactors as measured by the PPI-SF. Therefore, researchers may want to examine this complex relationship that Stress Immunity has with psychopathy using other variations of psychopathy assessments. This could be important not only with research on psychopathy and suicide but with psychopathy and crime (DeLisi, 2009, 2016) and even successful psychopaths.³ Moreover, research

indicates that childhood trauma abuse, in conjunction with certain personality traits, may attenuate the relationship between psychopathy and suicidality (Verona et al., 2005). This suggests that children who were abused may be more likely to exhibit both suicidal and secondary psychopathic tendencies later in life, putting them at greater risk for both problematic attitudes and behaviors. Future studies should aim to examine this complex relationship among juvenile offenders. Similarly, pressing questions remain on how various psychological conditions, including psychopathy, anxiety, depression, substance use disorders, and others moderate or mediate violence exposure and its association with suicidality, and should be explored in future research. The current findings also bear on emerging research that explores the emotional life and emotional regulation capacity of psychopathic individuals (cf., Ellis et al., 2017; Maxwell, Lynn, & Lilienfeld, 2017; Sellbom, 2015; Sevecke, Franke, Kosson, & Krischer, 2016). There is important variation in the degree to which psychopathic delinquents experience positive and negative emotional states, the degree to which they acknowledge, understand, and are aware of those emotional states, and the degree to which they can modulate, control, and regulate their emotional states. Much recent work has shown that salience of negative emotionality and its association with externalizing symptoms (Baglivio et al., 2016; DeLisi & Vaughn, 2014; Garofalo & Velotti, 2017; Velotti et al., 2017), which certainly tangents on the focus of the current study. Psychopathic delinquents that chronically experience negative emotions, especially sadness and depression, would likely be at greater risk for suicidal behaviors. Fortunately, there has been a recent flurry of studies on the multifaceted emotional features of psychopathic persons (see, Garofalo & Neumann, 2018; Garofalo Neumann, & Velotti, 2018), thus, we envision research connections between the study of suicidal behavior and psychopathy and emotional regulation and psychopathy.

Conclusion

This study indicates that there is merit in investigating psychopathic traits, above and beyond comorbid disorders such as anxiety and depression as additive risk factors for suicidality among antisocial and externalizing youth. Although, Cleckley (1976) initially characterized psychopaths as “immune to suicide,” this study indicates that among convicted juvenile offenders, those with higher psychopathic features showed a significantly higher risk of suicidal ideation than those with lower levels of psychopathy (Verona, Patrick & Joiner, 2001). However, this study also indicates that the affective sub-factors of psychopathy, including Coldheartedness and Stress Immunity, may serve as protective factors against suicidal thoughts and behaviors, while behavioral and lifestyle components such as Carefree Nonplanfulness, Blame Externalization, and Rebellious Nonconformity are positively linked to suicidal ideation. These findings have important policy implications, particularly as suicide is the leading cause of death among juvenile detention inmates. Furthermore, incarcerated juvenile offenders, who tend to have a higher baseline of antisocial behavior and exposure to violence and abuse compared to the general population, may experience higher than average rates of secondary psychopathy, thereby increasing their overall risk of suicidal thoughts and behaviors. As psychopathy screenings and risk assessments are widely administered among the juvenile offending population, there is potential to utilize these screenings to identify youth with high risk personality traits for suicidality, and other features associated with secondary psychopathy such as exposure to severe trauma and abuse. This could allow for the development of early identification and intervention opportunities that previously did not exist, and potentially prevent needless suicides from occurring.

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4																	
5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
6	1. Suicidal Ideation	-															
7	2. Suicide Attempts	.031	-														
9	3. PPI Total	.171***	.031	-													
11	4. Machiavellian Egocentricity	.203***	.037	.464***	-												
12	5. Social Potency	-.191***	.037	.271***	-.195***	-											
13	6. Coldheartedness	-.219***	-.092	.295***	-.158***	.211***	-										
15	7. Carefree Nonplanfulness	.291***	.066	.391***	.278***	-.196***	.180***	-									
16	8. Fearlessness	.221***	.088	.538***	.167***	.006	-.183***	.074*	-								
18	9. Blame Externalization	.304***	.145*	.366***	.357***	-.238***	-.293***	.073	.143***	-							
19	10. Rebellious Nonconformity	.272***	.131*	.611***	.327***	-.076*	-.113***	.203**	.368***	.345***	-						
21	11. Stress Immunity	-.374	-.139*	.192***	-.341***	.409***	.357***	-.286***	-.029	-.332***	-.132***	-					
22	12. Lifetime Depression Diagnosis	.180***	-.042	.036	-.032	.037	.025	.034	.026	.056	.015	-.050	-				
23	13. Antidepressants	.301***	.077	-.463	.085*	-.114**	-.109**	.099**	.071	.148***	.113**	-.179***	.251***	-			
24	14. Female	.224***	.129*	.037	.005	.014	-.100**	.149***	-.082*	.084*	.026	-.149***	.104*	.139***	-		
25	15. Age	.046	-.021	.005	-.080*	.074*	-.085*	-.120**	.036	.116*	.075	.082*	.052	-.012	-.031	-	
26	16. African American	-.322***	.079	-.080*	-.001	.125**	.045	-.296***	-.396***	-.004	.116**	.077*	-.059	-.194***	-.131***	.006	-
27	17. Gun Use	.307	-.200	-.001	-.463	-.463	-.706	.059	-.159	.354	-.698	-.342	.000	-.200	.139***	.270	.000
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Table 1. Correlation Matrix

Table 2
Negative Binomial Regression Models for Suicidal Ideation

	Model 1			Model 2		
Variable	IRR	BSE	Z	IRR	BSE	Z
PPI Total Score	1.01	.003	3.18***	1.01	.003	2.87**
Female	1.68	.107	8.11***	1.53	.124	5.27***
African American	.457	.049	-7.29***	.635	.100	-2.89**
Age	1.03	.040	0.84	1.03	.033	0.91
Gun Use	2.21	.293	5.98***	1.69	.284	3.14**
Antidepressants				1.27	.103	2.89**
Lifetime Depression Diagnosis				1.22	.089	2.68**
Wald χ^2	157.35***			74.17***		
LR Test of α	364.49***			92.73***		
N	720			369		

Note: *p<.05, **p<.01, ***p<.001.

Table 3: Negative Binomial Regression Models for Suicidal Ideation

Variable	Model 1			Model 2		
	IRR	BSE	Z	IRR	BSE	Z
Machiavellian Egocentricity	.999	.01	-0.10	.993	.01	-0.80
Social Potency	1.00	.01	0.45	1.01	.01	0.88
Coldheartedness	.982	.01	-1.57	.991	.01	-0.89
Carefree Nonplanfulness	1.04	.01	3.53***	1.02	.01	1.47
Fearlessness	1.01	.01	1.82	1.01	.01	1.24
Blame Externalization	1.04	.01	4.52***	1.03	.01	3.28**
Rebellious Nonconformity	1.03	.01	2.45*	1.03	.01	3.03**
Stress Immunity	.938	.01	-4.98***	.949	.01	-5.14***
Female	1.32	.13	2.86**	1.28	.10	3.09**
African American	.483	.05	-6.40***	.652	.12	-2.88**
Age	1.06	.04	1.33	1.03	.03	0.92
Gun Use	1.57		2.10*	1.51	.08	1.27
Antidepressants				1.13	.12	1.15
Lifetime Depression				1.23	.13	2.02*
Diagnosis						
Wald χ^2	269.05***			207.11***		
LR Test of α	197.22***			35.97***		
N	720			369		

Note: *p<.05, **p<.01, ***p<.001.

Table 4: Logistic Regression Models for Lifetime Suicide Attempt

Variable	Model 1			Model 2		
	Odds Ratio	BSE	Z	Odds Ratio	BSE	Z
PPI Total Score	1.01	.006	2.49*	1.01	.010	1.40
Female	3.52	.873	5.06***	3.70	1.48	3.28***
African American	.326	.071	-5.19***	.615	.223	-1.34
Age	1.03	.089	0.36	1.07	.104	0.70
Gun Use	5.71	4.82	2.07*	2.01	1.81	0.78
Antidepressants				2.23	.659	2.71**
Lifetime Depression Diagnosis				1.11	.298	0.37
Wald χ^2	66.15***			34.70***		
Pseudo R ²	.092			.087		
N	720			369		

Note: *p<.05, **p<.01, ***p<.001.

Table 5: Logistic Regression Models for Lifetime Suicide Attempt

Variable	Model 1			Model 2		
	Odds Ratio	BSE	Z	Odds Ratio	BSE	Z
Machiavellian Egocentricity	.972	.027	-1.02	.962	.031	-1.18
Social Potency	1.00	.025	0.02	1.01	.040	0.24
Coldheartedness	.982	.025	-0.75	.990	.029	-0.35
Carefree Nonplanfulness	1.06	.031	1.87	1.03	.049	0.61
Fearlessness	1.04	.025	1.51	1.04	.026	1.65
Blame Externalization	1.04	.027	1.24	1.05	.028	1.62
Rebellious Nonconformity	1.08	.031	2.66**	1.08	.037	2.32*
Stress Immunity	.869	.023	-5.28***	.868	.028	-4.33***
Female	2.83	.715	4.13***	2.71	1.01	2.67**
African American	.400	.111	-3.30***	.693	.322	-0.79
Age	1.03	.073	0.34	1.07	.121	0.60
Gun Use	3.07	2.65	1.30	1.46	1.52	0.37
Antidepressants				1.93	.409	3.12**
Lifetime Depression Diagnosis				1.13	.282	0.50
Wald χ^2	116.54***			123.21***		
Pseudo R ²	.194			.180		
N	720			369		

Note: *p<.05, **p<.01, ***p<.001.